

REMARKS

This paper responds to the Office Action mailed on August 22, 2006.

No claims are amended, no claims are canceled, and no claims are added; as a result, claims 1-8, 11-24 and 26 are now pending in this application.

Information Disclosure Statement

Applicant submitted a Supplemental Information Disclosure Statement and a 1449 Form on June 2, 2004. Applicant respectfully requests that an initialed copy of the 1449 Form be returned to Applicant's Representatives to indicate that the cited reference has been considered by the Examiner. Applicants are submitting a courtesy copy of the 1449 Form herewith.

§102 Rejection of the Claims

Claims 1-3, 5-6, 11-21, 23-24 and 26 were rejected under 35 U.S.C. § 102(b) for anticipation by Doan et al. (U.S. 5,372,973). Applicant respectfully traverses this rejection.

The cited reference of Doan appears to disclose forming self aligned gate structures around cathode emitter tips using chemical mechanical polishing (CMP). The emitter tip may have a sputtered “low work function material” (see figures 6A and 6B, and col. 6, lines 29-56).

Applicant respectfully disagrees with the Examiner’s statement on page 6 of the outstanding Office Action that “Doan discloses that the cathode tip 13 be coated, (lines 34-35 of column 6). In this case entire emitter is called cathode tip”. Applicant respectfully submits that Doan only suggests coating the emitter tips, and the described method could only coat the tip of emitter 13 through the narrow opening in the conductive layer 15. Applicant submits that one of ordinary skill in the art would easily understand that Doan can not disclose or suggest the claimed feature of “...at least one emitter comprising silicon having a coating embedded in substantially the entirety of the surface of the at least one emitter ...”, as recited in claim 1, because one of ordinary skill in the art would understand that there is no method whereby the cited sputtering process (col. 6, line 42) can coat anything but the region exposed by the narrow opening in the anode 15. Thus, the entire “cathode tip 13”, which reaches to the cathode layer 12, can not be substantially covered with a coating of any type. By contrast, the present

application has a material (306 and 406 in Figs. 3 and 4) that is embedded in the emitter (301 in Fig. 3 and 401 in Fig. 4) and covers substantially the entire emitter (301 and 401). Thus, even if Applicant accepts the Examiner's equation of the "cathode tip 101 formed on the substrate 100" (see page 5, line 3 of the present application) with the cathode conductor 12 having an integral emitter tip 13 of Doan, the Examiner still has given no specific reason how the low work function material on the tip of the emitter 13 is stated to be, or could possibly be coating as substantial portion of the either the tip 13 or the integral cathode 12. Thus, Doan does not disclose a coating on the entire cathode. Nor would one of ordinary skill in the art expect Doan to suggest coating the entire cathode tip 13 with a low work function material, since a coating at any location other than the very tip of cathode tip 13 would render the invention inoperative for its stated function by allowing electron generation at locations directly below the anode 15, rather than at the gap between the two portions of the anode 15, where the emitted electrons may reach the "cathodeluminescent panel" and thus create light.

Applicant submits that one of ordinary skill in the art would easily understand that Doan can not disclose or suggest the claimed feature of "*...the coating acts in the presence of outgassing to inhibit degradation of the at least one emitter ...*", as recited in claim 1. Applicant can find nothing in the cited reference indicating a coating material that acts in the presence of outgassing to inhibit degradation, and notes that there is nothing in the reference discussing outgassing. The single reference in Doan to erosion (col. 6, line 54) does not suggest reaction to outgassing, and the materials suggested are not the same as found in the claimed structure of the dependent claims, and thus do not disclose the "recited coating material" as suggested by the Examiner on page 3 of the outstanding Office Action. In view of the above noted differences, Applicant respectfully submits that the Doan reference does not anticipate claim 1.

Applicant respectfully submits that the cited reference fails to disclose at least the feature of "*...silicon having a coating embedded in substantially the entirety of the surface of the at least one emitter ...*", as recited in claim 11, with similar language in independent claims 12-15, 18 and 26. The reasons are similar to those given above, and further since the reference does not disclose or suggest acting in the presence of outgassing.

The dependent claims are held to be patentable at least as depending upon patentable base claims. In view of the above, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Claims 1, 4 and 6 were rejected under 35 U.S.C. § 102(b) for anticipation by Koga et al. (U.S. 5,925,891). Applicant respectfully traverses this rejection.

Koga reference discloses a low work function coated 20 cathodes 17 with withdrawn electrode 19A with a circumferential diameter smaller than the openings in the first and second insulator films 16A and 18A (Fig. 1 and col. 10 lines 23-42). Sputtered layer 20 coats the cathode 17, the bottom of the well on the substrate 11, and the top of the withdrawn electrode 19A (see Abstract, Fig. 1, col.10, line 29). The coating 20 is formed on the surface of the cathode, substrate and electrode and is not an embedded coating. The specification refers to the layer 23 as a “surface coating” (col. 18, line 12) to avoid the situation shown in the portion of the reference indicated by the Examiner as disclosing or showing a porous layer, and thus the section indicated by the Examiner clearly teaches against embedded coating (see Fig. 18(b) and col. 18), exactly as stated by Applicant in the previous response.

Applicant respectfully submits that the cited reference fails to disclose the feature of “*...emitter comprising silicon having a coating embedded in substantially the entirety of the surface of the at least one emitter that releases electrons at a predetermined energy level, the coating acts in the presence of outgassing to inhibit degradation of the at least one emitter...*”, as recited in claim 1. The Examiner admits on page 4 that Koga does not disclose the coating acting in the presence of contamination to prevent damage, and the materials used are different. Therefore, Applicant again respectfully submits that the cited reference does not disclose all of the recited features, in particular an embedded coating that inhibits degradation.

The dependent claims are held to be in patentable condition at least as depending from a base claim shown above to be patentable over the cited reference. In view of the above noted failures of the cited reference to disclose recited features of the present claims, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

§103 Rejection of the Claims

Claims 4 and 7-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Doan et al. (U.S. 5,372,973) as applied to claim 1 above, and further in view of Takemura (U.S. 5,666,020). Applicant respectfully traverses this rejection.

Doan has been discussed above and does not disclose or suggest an embedded coating or acting to inhibit degradation. Takemura discloses a top portion of an emitter (20a) having a highest resistance (col. 4, lines 45-48 and col. 5, lines 13-16), with platinum, titanium, tungsten, or molybdenum silicide coating (see col. 5, lines 22-25). The emitter has a resistance that increases toward the top of the emitter (col. 5, lines 3-5). Takemura discloses that the portion of the emitter closest to the tip is coated with a third material (col. 5, lines 22-23).

Applicant respectfully submits that the suggested combination of references fails to describe or suggest “*... emitter comprising silicon having a coating embedded in substantially the entirety of the surface of the at least one emitter that releases electrons at a predetermined energy level, the coating acts in the presence of outgassing to inhibit degradation of the at least one emitter...*”, as recited in claim 1, from which claim 4 depends. Applicant respectfully submits that Takemura does nothing to cure the above noted failure of Doan to suggest an embedded coating over the entire emitter. Similar reasoning applies to claim 7, which is thus also patentable over the suggested combination of references.

In view of the above, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Doan et al. as applied to claim 18 above, and further in view of Hush (U.S. 5,663,742). Applicant respectfully traverses this rejection.

Doan is respectfully submitted to not suggest an embedded coating as discussed above in two of the prior rejections. The cited reference of Hush is used in the outstanding Office Action to show that field emitter devices used as camcorder viewfinder is known. Applicant respectfully submits that Hush does not correct the above noted failure of the Doan reference to describe or suggest at least the claimed combination of features of “*...at least one emitter having a coating embedded in substantially the entirety of the surface of the at least one emitter that*

releases electrons at a predetermined energy level, the coating is stable in the presence of the outgassing ...”, as recited in claim 18 from which claim 22 directly depends. Thus, the suggested combination of references still fails to contain each and every feature of the claim in question.

In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney David Suhl at (508) 865-8211, or the undersigned attorney at (612) 349-9587 to facilitate prosecution of this application.

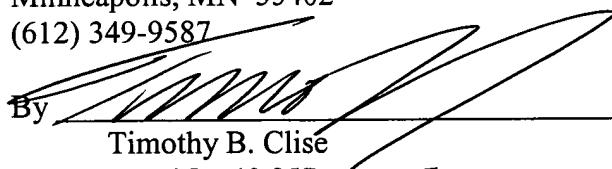
If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

BEHNAM MORADI ET AL.

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Date 14 Nov '06

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 14 day of November 2006.

Kate Gannon
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Signature